IEAGHG Information Paper 2014-20: Communicating Climate Science

We have all either read with interest or are aware of the steady streams of reports, namely the summary for policymakers that have been made public over the last six months or so from the International Panel on Climate Change (see http://www.ipcc.ch/). The first of these reports was published in October 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. This report has considered new evidence and research on climate change that has been published since the last assessment report IPCC's Fourth Assessment Report (AR4) published in 2007, and incorporates subsequent new findings of research. The headline message from WGI was that:

"Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases have increased"

This is a strong message and should leave nobody in doubt that climate change is real. The language the IPCC has becoming increasingly stronger over the years that climate change is here to stay unless we do something about it. One could infer that the increased strength of the measures is aimed to heighten the sense of alarm that we must do something and soon in the minds of policy makers as they are the primary target for the IPCC assessment report messages.

The second report Climate Change 2014: Impacts, Adaptation and Vulnerability published in early 2014 by The Working Group II. The report considers the vulnerability and exposure of human and natural systems, the observed impacts and future risks of climate change, and the potential for and limits to adaptation. It also has assessed the risks and opportunities for societies, economies, and ecosystems around the world. The report indicates that "human influence on the climate is clear". They point out that some ecosystems are already at risk, namely Arctic-sea-ice and coral-reef systems. Also, that the impacts of climate change will be greatest for the poorest communities around the world.

Overall, the report is not good reading it indicates clearly that things are changing already and some of the changes may already be irreversible. One strong message I take from this is that if we do nothing and the world continues to warm that the impacts are going to get much worse – my words not theirs.

The IPCCC reporting process, however, is not without its detractors in the way it communicates its messages. For example the Climate Outreach and Information Network (COIN) has recently released a report on how the UN's IPCC can communicate better with the public. One of its key conclusions is that the IPCC must adopt new ways of presenting its work and engaging the public and media. The reports stresses that it not criticising the IPCC's assessment work. Rather that presenting the world with information as they do is not creating the political change we need. They argue that more facts and more information are unlikely to convince the public in the future.

They recommend that:

- The IPCC should invest in communication and begin using video and social media. The IPCC must create an engaging and accessible public face.
- The IPCC should abandon assessment reports. They argue that these infrequent and lengthy assessments have not provided policy makers with what they need. Instead the IPCC should provide 'science on demand' for governments based on their needs.
- The IPCC science is currently interpreted for the public by many other organisations who produce summaries and analysis. The IPCC should formalise and expand these relationships. It should work with a diverse range of organisations to increase its reach.

The full report can be downloaded at: http://www.climateoutreach.org.uk/science-stories-bringing-the-ipcc-to-life/

A second assessment of the IPCC reports communications skills is referenced in the Carbon Brief article entitled; Enabling the messenger: How can the IPCC get its message across to the public? http://www.carbonbrief.org/blog/2014/05/enabling-the-messenger-how-can-ipcc-climate-scientists-get-their-message-across/?

The article refers to research from Leeds University in the UK, which has conducted a linguistic analysis of all the IPCC reports, and the media coverage of them. The objective of this analysis was to test for two things: how optimistic the publications are, and how easy they are to understand.

The results indicate the UK tabloids were most likely to present extremely optimistic or pessimistic reports on climate science. Language from broadsheets (like the times, Telegraph etc.,),were more readable - requiring less prior education to be understandable - and less dispassionate from the time the IPCC first started producing its reports to the present day.

The research also indicated that the IPCC summaries for policymakers are by far the least readable of all the texts analysed, on average requiring a reading level equivalent to a PhD and two years of work experience.

Personally I have some sympathies with the subject of the articles I have quoted and I know I can be criticised for drawing any opinions from a small reference sample. In particular I would comment as follows:

- Having been involved in a Special Report I have some insight into the length of time that these reports evolve over (4 years in effect). They are statements of what has evolved in research terms between sets points in time and should be read as such. In the case of the latest report between 2007 (AR4) and now 2013/4. They are not reports on the current status of research as at the date of publishing the information contained therein is already 1 to 2 years behind. This is the nature of the beast and we must take that into account when we read them. However, we do look at them as statements of the here and now which they are not. This is most marked for the one report in the series I have not mentioned, WGIII on mitigation. Another topic for another day.
- As a scientist myself I can find them hard to read. The scientific language used outside of my own discipline can present me with challenges in interpreting the results presented.
- Are they suitable for the lay scientist, laymen or media to be honest I don't think they are, my opinion.

- Timeliness – in the modern communication age is this long winded reporting process still relevant? I think we are increasingly used to here and now information that is both the beauty of and the horror of the internet. Personally I would ask the IPCC to consider more timely shorter up to date reports.

Following on from these comments, In February 2014 the Royal Society from the UK and the US National Academy of Sciences issued a joint report called "Climate Change Evidence & Causes". The overview of the report can be found at http://dels.nas.edu/resources/static-assets/exec-office-other/climate-change-full.pdf. The report is set out in an easy to read approach and basically is framed around answering 20 key questions. These questions include:

1. Is the climate warming?
2. How do scientists know that recent climate change is largely caused by human activities?
3. CO_2 is already in the atmosphere naturally, so why are emissions from human activity significant?
4. What role has the Sun played in climate change in recent decades?
5. What do changes in the vertical structure of atmospheric temperature—from the surface up to the stratosphere—tell us about the causes of recent climate change?
6. Climate is always changing. Why is climate change of concern now?
7. Is the current level of atmospheric CO_2 concentration unprecedented in Earth's history?
8. Is there a point at which adding more CO_2 will not cause further warming?
9. Does the rate of warming vary from one decade to another?
10. Does the recent slowdown of warming mean that climate change is no longer happening?
11. If the world is warming, why are some winters and summers still very cold?
12. Why is Arctic sea ice decreasing while Antarctic sea ice is not?
13. How does climate change affect the strength and frequency of floods, droughts, hurricanes, and tornadoes?
14. How fast is sea level rising?
15. What is ocean acidification and why does it matter?
16. How confident are scientists that Earth will warm further over the coming century?
17. Are climate changes of a few degrees a cause for concern?
18. What are scientists doing to address key uncertainties in our understanding of the climate system?
19. Are disaster scenarios about tipping points like 'turning off the Gulf Stream' and release of methane from the Arctic a cause for concern?
20. If emissions of greenhouse gases were stopped, would the climate return to the conditions of 200 years ago?

The report then addresses each question in turn with a headline short paragraph in a box with detailed scientific content below using supporting graphs and figures for those that want to read in more depth. The report states that it cannot answer all the questions; rather it provides a "what we know now" approach. All in all it is quite readable, I think the messages framed through the Q&A approach more adequately address the needs of the lay scientist, layman and media. This approach in my opinion is simpler than the IPCC approach of multiple chapters each issuing separate summary reports for policy makers. Ultimately we will get the whole picture in a global summary of the whole 5th Assessment Report. But to be honest it is a protracted way of reporting results. However I do note that this report is not as extensive in its coverage as the IPCC report in that it does not cover mitigation.

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